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RRRRRRRR MM MM 000000 SSSSSSSS HH HH AAAAAA RRRRRRRR EEEEEEEEE
RRRRRRRR MM MM 000000 SSSSSSSS HH HH AAAAAA RRRRRRRR EEEEEEEEE
RR RR RR MMMM MMMM 00 00 SS SS HH HH AA AA RR RR EE
RR RR RR MMMM MMMM 00 00 SS SS HH HH AA AA RR RR EE
RR RR RR MM MM 00 0000 SS SS HH HH AA AA RR RR EE
RRRRRRRR MM MM 00 00 00 SSSSSS HHHHHHHHHH AA AA RRRRRRRR EEEEEEE
RRRRRRRR MM MM 00 00 00 SSSSSS HHHHHHHHHH AA AA RRRRRRRR EEEEEEE
RR RR MM MM 0000 00 HH HH AAAAAAAAAA RR RR EE
RR RR MM MM 0000 00 HH HH AAAAAAAAAA RR RR EE
RR RR MM MM 00 00 SS HH HH AA AA RR RR EE
RR RR MM MM 00 00 SS HH HH AA AA RR RR EE
RR RR MM MM 000000 SSSSSSSS HH HH AA AA RR RR EEEEEEEEE
RR RR MM MM 000000 SSSSSSSS HH HH AA AA RR RR EEEEEEEEE
.....
```

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LL IIIII SSSSSSSS
LL IIIII SSSSSSSS
LL II SS
LL II SS
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LL II SS
LL II SSSSSS
LL II SSSSSS
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LL II SS
LL II SS
LLLLLLLLL IIIII SSSSSSSS
LLLLLLLLL IIIII SSSSSSSS
```



|      |      |   |
|------|------|---|
| (2)  | 186  | DECLARATIONS  |
| (3)  | 219  | RMSINIT_SFSB - Allocate and initialize the SFSB                 |
| (4)  | 388  | RMSINIT_SFSB_IRB - Allocate and initialize the SFSB using IRAB. |
| (5)  | 483  | CHECK_SHARE_OPTIONS   |
| (6)  | 543  | File Locking routines   |
| (7)  | 710  | RMSRLS_SFSB - Deallocate the SFSB                               |
| (8)  | 790  | RMSINIT_GBSB - Allocate and init the GBSB                       |
| (9)  | 910  | Global Buffer Section locking routines                          |
| (10) | 1010 | RMSRLS_GBSB - Deallocate the GBSB and dequeue the lock on it    |
| (11) | 1069 | VALIDATE_EBK_HBK  |

```

0000 1          $BEGIN RMOSHARE,000,RMSRMS0,<SHARING ROUTINES>
0000 2
0000 3
0000 4 :*****
0000 5 :*
0000 6 :*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY
0000 7 :*  DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASSACHUSETTS.
0000 8 :*  ALL RIGHTS RESERVED.
0000 9 :*
0000 10 :*  THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND COPIED
0000 11 :*  ONLY IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE AND WITH THE
0000 12 :*  INCLUSION OF THE ABOVE COPYRIGHT NOTICE. THIS SOFTWARE OR ANY OTHER
0000 13 :*  COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAILABLE TO ANY
0000 14 :*  OTHER PERSON. NO TITLE TO AND OWNERSHIP OF THE SOFTWARE IS HEREBY
0000 15 :*  TRANSFERRED.
0000 16 :*
0000 17 :*  THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT NOTICE
0000 18 :*  AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL EQUIPMENT
0000 19 :*  CORPORATION.
0000 20 :*
0000 21 :*  DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS
0000 22 :*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.
0000 23 :*
0000 24 :*
0000 25 :*****
0000 26 :

```



```
0000 28 :++
0000 29 :
0000 30 : Facility: RMS32
0000 31 :
0000 32 : Abstract:
0000 33 :
0000 34 : this module is comprised of subroutines which are used by the
0000 35 : file sharing logic of rms. these utilities were written to
0000 36 : facilitate the processing of functions which are called many
0000 37 : times or from many locations. the functions include the
0000 38 : acquisition and release of resources and buffers.
0000 39 :
0000 40 : Environment:
0000 41 :
0000 42 : star processor running starlet exec.
0000 43 :
0000 44 : Author: Keith B. Thompson creation date: 9-Jul-1982
0000 45 :
0000 46 : Modified By:
0000 47 :
0000 48 : V03-036 JEJ0053 J E Johnson 30-Aug-1984
0000 49 : Put in a test to bugcheck if we ever try to store an
0000 50 : EOF of 0/0.
0000 51 :
0000 52 : V03-035 DGB0024 Donald G. Blair 07-Mar-1984
0000 53 : Allocate a fib descriptor and fib in VALIDATE_EBK_HBK
0000 54 : so that we can fill in the FIB$B_AGENT_MODE field and
0000 55 : pass it to the file system.
0000 56 :
0000 57 : V03-034 JWT0160 Jim Teague 29-Feb-1984
0000 58 : Remove calls to RMS$DEALLENF.
0000 59 :
0000 60 : V03-033 SHZ0014 Stephen H. Zalewski 23-Sep-1983
0000 61 : Replace line in lock manager call deleted by lja0098.
0000 62 :
0000 63 : V03-032 LJA0098 Laurie J. Anderson 20-Sep-1983
0000 64 : Make sure that when a EFN is allocated that it is also
0000 65 : deallocated even if it IS used. This will fix a problem
0000 66 : RMS will hang a user process in a $CLOSE if Deferred
0000 67 : write is set. RMS will flush the BDB's using one EFN
0000 68 : and then write the file header characteristics using
0000 69 : another EFN. The user ends up waiting for a EFN which
0000 70 : is never used again.
0000 71 :
0000 72 : This is probably a temporary fix. The real fix will
0000 73 : be done for FT2 of V3B.
0000 74 :
0000 75 : V03-031 SHZ0013 Stephen H. Zalewski 19-Sep-1983
0000 76 : Add a new routine that will initialize the SFSB using an
0000 77 : IRAB instead of an IFAB.
0000 78 :
0000 79 : V03-030 SHZ0012 Stephen H. Zalewski 12-Sep-1983
0000 80 : If a user attempts to open a file shared and specified UFO
0000 81 : in the FOP field of the FAB, then he must also specify the
0000 82 : UPI bit in the SHR field of the FAB.
0000 83 :
0000 84 : When taking out the shared file lock, get the device name ID
```

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0000 141 :

from a new field that will uniquely identify this disk through-  
out a cluster. (This field is not ascii and is therefore  
unreadable.)

V03-029 SHZ0011 Stephen H. Zalewski 10-Aug-1983  
Zero the pointer to the global buffer section in the IFB  
before dequeuing the lock. This is to prevent last chance  
from attempting to unmap from the section if the process gets  
stopped while we are dequeuing the lock.

Turn off checking of the sharing fields in the fab.

V03-028 SHZ0010 Stephen H. Zalewski 28-Jul-1983  
Add support for cluster global buffers.

V03-027 SHZ0009 Stephen H. Zalewski 26-Jun-1983  
Make SFSB a root lock instead of a child of the XQP lock.

V03-026 SHZ0008 Stephen H. Zalewski 25-Jun-1983  
Check a different set of journal flags in RMSRLS\_SFSB.

V03-025 SHZ0007 Stephen H. Zalewski 30-Apr-1983  
Modify the way register storage is done in VALIDATE\_EBK\_HBK  
routine.

V03-024 SHZ0006 Stephen H. Zalewski 18-Apr-1983  
Add cluster failover support for file locking.

V03-023 SHZ0005 Stephen H. Zalewski 13-Apr-1983  
Do not set IFBSV\_STALL\_LOCK flag around calls to RM\$STALL\_LOCK.  
This flag is now set and cleared in RM\$STALL\_LOCK itself.  
This fixes a deadlock condition with global buffers.

V03-022 SHZ0004 Stephen H. Zalewski 12-Apr-1983  
Make sure last accessor to a global buffer section  
zeroes out all fields in the value block for the GBSB.

V03-021 JWH0199 Jeffrey W. Horn 22-Mar-1983  
Save the file lock if we are trying to give it up  
within a recovery unit.

V03-020 KBT0498 Keith B. Thompson 21-Feb-1983  
Fix the file lock for xqp

V03-019 KBT0496 Keith B. Thompson 18-Feb-1983  
Fix init\_gbsb to stall with the correct structure and  
put in a temporary hack to fix failover

V03-018 KBT0492 Keith B. Thompson 9-Feb-1983  
Check for compatible sharing-fac options

V03-017 KBT0483 Keith B. Thompson 1-Feb-1983  
Fix kbt0450 (r9 NOT r10!)

V03-016 KBT0465 Keith B. Thompson 10-Jan-1983  
Use parent lock id for file locks if using the xqp and  
request all of the lock modes to be EXEC



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0000 198 :

V03-015 KBT0450 Keith B. Thompson 6-Jan-1983  
Load the ifab eof stuff correctly in init\_sfsb

V03-014 KBT0431 Keith B. Thompson 3-Dec-1982  
Change the way the shared lock name is made

V03-013 KBT0402 Keith B. Thompson 30-Nov-1982  
Change fwa\$t\_shrfilev to fwa\$t\_shrfileb

V03-012 SHZ0003 Stephen H. Zalewski, 29-Oct-1982 19:02  
Zero the GBH\_PTR field in the IFAB after dequeuing the lock  
on the GBSB. This prevents last chance from attempting to  
dequeue the GBSB again.

V03-011 JWH0105 Jeffrey W. Horn 21-Sep-1982  
Fix bug in storage of HBK,EBK pair into value block.

V03-010 SHZ0002 Stephen H. Zalewski, 21-Sep-1982 13:07  
Make RM\$RAISE\_GBS\_LOCK and RM\$LOWER\_GBS\_LOCK stuff the  
appropriate lock mode into R0. Remove RM\$GET\_GBS\_LOCK  
entry point. Make RM\$RLS\_SFSB always look at R9 for  
the IFAB. Removed unnecessary block definitions.

V03-009 KBT0324 Keith B. Thompson 10-Sep-1982  
Removed all SO sharing code add rm\$rls\_sfsb, rename  
rm\$get\_gsb lock to rm\$init\_gsb, rm\$rls\_gsb lock to  
rm\$rls\_gsb, add routine rm\$rls\_sfsb and make this  
a new source module

V03-008 SHZ0001 Stephen H. Zalewski, 1-Sep-1982 14:44  
Add global buffer section locking routines.

V03-007 KBT0300 Keith B. Thompson 24-Aug-1982  
Reorganize psects

V03-006 KBT0123 Keith B. Thompson 7-Aug-1982  
Add more locking features

V03-005 KBT0079 Keith B. Thompson 9-Jul-1982  
Add new file locking routines

## .SBTTL DECLARATIONS

\$ATRDEF : acp attribute list def.  
\$ENQDEF : enq service definitions  
\$FABDEF : fab data definitions  
\$FATDEF : ACP QIO record attribute defs.  
\$FIBDEF : file information block definitions  
\$FTLDEF : fatal bugcheck codes.  
\$FWADEF : file work area definitions  
\$GBSBDEF : global buffers synchronization block  
\$IFBDEF : ifab data definitions  
\$IODEF :  
\$IRBDEF : irab data definitions

|          |      |     |
|----------|------|-----|
|          | 0000 | 199 |
|          | 0000 | 200 |
|          | 0000 | 201 |
|          | 0000 | 202 |
|          | 0000 | 203 |
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|          | 0000 | 206 |
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|          | 0000 | 210 |
|          | 0000 | 211 |
|          | 0000 | 212 |
|          | 0000 | 213 |
|          | 0000 | 214 |
|          | 0000 | 215 |
| 0000000F | 0000 | 216 |
| 00000016 | 0000 | 217 |

|           |                                     |
|-----------|-------------------------------------|
| \$LCKDEF  | ; enq lock definitions              |
| \$PSLDEF  | ; access mode definitions           |
| \$RMSDEF  | ; rms error codes                   |
| \$SFSBDEF | ; shared file synchronization block |
| \$SSDEF   |                                     |

These are the FAC/SHR fields which must be compatible for  
inter-process file sharing

NOTES:

- 1) We allow one process to mutistream while another does not
- 2) The NIL option is taken care of in rm\$access

SHRBITS = <FAB\$M\_GET!FAB\$M\_PUT!FAB\$M\_DEL!FAB\$M\_UPD>  
FHCLEN = IFB\$C\_FHAEND-IFB\$B\_RFMORG ; FHC Length



```
0000 219      .SBTTL RMS$INIT_SFSB - Allocate and initialize the SFSB
0000 220
0000 221      :++
0000 222      :
0000 223      : RMS$INIT_SFSB
0000 224      :
0000 225      : This routine allocates the SFSB. The SFSB is allocated one per IFAB,
0000 226      : and is used to contain the necessary local lock manager context for
0000 227      : locking the shared file. This will be allocated even when sharing is
0000 228      : only multi-stream, as the lock manager will be used in that case also.
0000 229      :
0000 230      : A protected write lock is requested on the file also.
0000 231      :
0000 232      : Calling Sequence:
0000 233      :
0000 234      : BSBW RMS$INIT_SFSB
0000 235      :
0000 236      : Input Parameters:
0000 237      :
0000 238      : r10 fwa address
0000 239      : r9  ifab address
0000 240      : r8  fab address
0000 241      :
0000 242      : Implicit Inputs:
0000 243      :
0000 244      : fwa$t_fibbuf - used to pick up file id
0000 245      : fwa$q_device - used to pick up ascii device string
0000 246      :
0000 247      : Output Parameters:
0000 248      :
0000 249      : r0 status code
0000 250      :
0000 251      : Implicit Outputs:
0000 252      :
0000 253      : sfsb allocated and initialized, a PW lock made on it
0000 254      : if an enq error occurs, the $FAB stv field has the system service
0000 255      : code...
0000 256      :
0000 257      : Completion Codes:
0000 258      :
0000 259      : suc, dme, enq, upi and shr
0000 260      :
0000 261      : Side Effects:
0000 262      :
0000 263      : r1-r7 destroyed
0000 264      :
0000 265      :--
0000 266      :
0000 267      : RMS$INIT_SFSB::
0000 268      :
0000 269      :
0000 270      : Check to see if we should be doing sharing in the first place
0000 271      :
0000 272      :
0000 273      : BBC #FAB$V_UFO,FAB$L_FOP(R8),10$ : ufo can't be spec'd
0000 274      : BBS #FAB$V_UPI,FAB$B_SHR(R8),10$ : unless upi is also.
0000A 275      : RMSERR SHR
```

0B 04 A8 11 E1  
06 17 A8 06 E0

```
05 000F 276 RSB
      0010 277
      60 8F 93 0010 278 10$: BITB #<FAB$M_BIO!FAB$M_BRO>,- ; is this any form of block io
      16 A8 13 0013 279 FAB$B_FAC(R8) ; if so it must be upi
      06 17 A8 06 E0 0015 280 BEQL INIT_SFSB ; no, so don't worry
      0017 281 BBS #FAB$V_UPI,FAB$B_SHR(R8),INIT_SFSB ; upi? then ok
      001C 282 RMSERR UPI ; get out now
      05 0021 283 RSB
      0022 284
      0022 285 INIT_SFSB:
      52 11 9A 0022 286 MOVZBL #<SFSB$C_BLN/4>,R2 ; get block length to allocate
      51 59 D0 0025 287 MOVL R9,R1 ; allocate from same page as ifab
      FFD5' 30 0028 288 BSBW RMS$GETBLK ; allocate it
      06 50 E8 002B 289 BLBS R0,10$ ; branch if ok
      002E 290 RMSERR DME ; dynamic memory exhausted
      05 0033 291 RSB ; return error to caller
      78 A9 51 D0 0034 292 10$: MOVL R1,IFB$L_SFSB_PTR(R9) ; address of SFSB in IFAB
      08 A1 10 90 0038 293 MOVB #SFSB$C_BID,SFSB$B_BID(R1) ; fill in block id
      003C 294
      003C 295 ;
      003C 296 ; Make a descriptor in the SFSB, pointing to RESNAM field.
      003C 297 ;
      003C 298
      0C A1 DE 003C 299 MOVAL SFSB$T_RESNAM(R1),- ; address of RESNAM string
      04 A1 003F 300 SFSB$L_ADDRESS(R1) ; to descriptor address field
      0041 301
      0041 302 ;
      0041 303 ; Put RMS facility code (RMS$) into first longword of name.
      0041 304 ; Copy File ID from FIB in FWA to next three words of the SFSB.
      0041 305 ; Copy ascii device name from FWA into SFAB after File ID.
      0041 306 ;
      0041 307 ;
      50 01F4 CA DE 0041 308 MOVAL FWA$T_FIBBUF(R10),R0 ; get address of FIB
      0A 9B 0046 309 MOVZBW #SFSB$C_FIX_LEN,- ; initialize length of RESNAM string
      61 0048 310 SFSB$W_NAME_LEN(R1) ; to fixed length portion
      0049 311
      0C A1 24534D52 8F D0 0049 312 MOVL #^A/RMS$/ ,SFSB$L_FAC_CODE(R1) ; set RMS facility code into name
      0051 313
      04 A0 B0 0051 314 MOVW FIB$W_FID_NUM(R0),- ;
      10 A1 0054 315 SFSB$W_FID_NUM(R1) ; first word of FID
      06 A0 B0 0056 316 MOVW FIB$W_FID_SEQ(R0),- ;
      12 A1 0059 317 SFSB$W_FID_SEQ(R1) ; second word of FID
      08 A0 B0 005B 318 MOVW FIB$W_FID_RVN(R0),- ;
      14 A1 005E 319 SFSB$W_FID_RVN(R1) ; last word of FID
      0060 320
      0198 CA A0 0060 321 ADDW2 FWA$Q_SHRFIL_LCK(R10),- ; get length of device string
      61 0064 322 SFSB$W_NAME_LEN(R1) ; add it to descriptor length
      0198 CA 28 0065 323 MOVW3 FWA$Q_SHRFIL_LCK(R10),- ; move the string to the SFSB
      019C DA 0069 324 @FWA$Q_SHRFIL_LCK+4(R10),- ; resnam field to name the
      16 A1 006C 325 SFSB$T_DEV_NAME(R1) ; file
      006E 326
      54 78 A9 D0 006E 327 MOVL IFB$L_SFSB_PTR(R9),R4 ; restore SFSB address into R4
      0072 328
      0072 329 ;
      0072 330 ; Lock the shared file protected write. This gives a parent_id to any
      0072 331 ; subsequent record locks.
      0072 332 ;
```



```
00000000'EF 16 0072 333 DO_ENQ: JSB RMS$SETEFN ; Allocate event flag
01 BA 0072 334 POPR #^M<R0> ; Get the flag
007A 335 $ENQ_S LKMODE = #LCK$K_PWMODE,-
007A 336 ACMODE = #PSL$C_EXEC,-
007A 337 EFN = R0,-
007A 338 ASTADR = RMS$STALLAST,-
007A 339 ASTPRM = R9,-
007A 340 LKSB = SFSB$L_LKSB(R4),-
007A 341 RESNAM = SFSB$Q_FILENAME(R4),-
007A 342 FLAGS = #LCK$M_VALBLK!LCK$M_SYNCSTS!LCK$M_SYSTEM
009C 343
009C 344
0689 29 50 E9 009C 345 BLBC R0,40$ ; Error?
8F 50 B1 009F 346 CMPW R0,#SS$_SYNCH ; Did it complete?
03 13 00A4 347 BEQL 20$ ; Yes, so do not stall
FF57' 30 00A6 348 BSBW RMS$STALL_LOCK ; Stall for the lock
50 2C A4 3C 00A9 349 20$: MOVZWL SFSB$W_STATUS(R4),R0 ; Get final status
18 50 E9 00AD 350 BLBC R0,40$ ; Did it work?
00B0 351
00B0 352
00B0 353 ; Check to see if we are first accessor (value block is zero). If so, do not
00B0 354 ; disturb ebk/hbk marks in ifab. If not zero, move values from value block to
00B0 355 ; ebk/hbk fields in ifab.
00B0 356
00B0 357
00B0 358 ASSUME IFB$L_EBK EQ <IFB$L_HBK + 4>
00B0 359 ASSUME SFSB$C_EBK EQ <SFSB$C_HBK + 4>
00B0 360
51 40 A4 3C A4 C1 00B0 361 ADDL3 SFSB$L_HBK(R4),SFSB$L_EBK(R4),R1; check for EBK=HBK=0
05 13 00B6 362 BEQL 30$ ; they were zero
70 A9 3C A4 7D 00B8 363 25$: MOVQ SFSB$L_HBK(R4),IFB$L_HBK(R9) ; store eof
00BD 364
0A A4 04 90 00BD 365 30$: MOVB #LCK$K_PWMODE,SFSB$B_CURMODE(R4); Save the current lock value
30 A4 D0 00C1 366 MOVL SFSB$L_LOCK_ID(R4),- ; Save parent id for bucket locks
0080 C9 00C4 367 IFB$L_PAR_LOCK_ID(R9)
00C7 368 ;BSBB CHECK_SHARE_OPTIONS ; do final checking
05 00C7 369 RSB ; return to caller
00C8 370
00C8 371
00C8 372
00C8 373 ; An error occurred on the ENQ. Check to see if we can recover from it.
00C8 374
00C8 375
00C8 376 40$:
50 0E0A 8F B1 00C8 377 CMPW #SS$ DEADLOCK,R0 ; Was it deadlock?
A3 13 00CD 378 BEQL DO_ENQ ; Try it again if it was.
50 09F0 8F B1 00CF 379 CMPW #SS$_VALNOTVALID,R0 ; Did Lock manager gave us old value
0B 12 00D4 380 BNEQ 45$ ; No, go map the error.
00000001'EF 16 00D6 381 JSB VALIDATE_EBK_HBK ; Yes, validate the data.
D9 50 E8 00DC 382 BLBS R0,25$ ; Continue if successful
05 11 00DF 383 BRB 50$ ; else map error.
FF17' 30 00E1 384 45$: RMSERR ENQ,R1 ; default to ENQ error for RMS$MAPERR
05 00E6 385 50$: BSBW RMS$MAPERR ; go map the error
00E9 386 RSB ; and return
```



```
00EA 388      .SBTTL RM$INIT_SFSB_IRB - Allocate and initialize the SFSB using IRAB.
00EA 389
00EA 390 :++
00EA 391 :
00EA 392 : RM$INIT_SFSB_IRB
00EA 393 :
00EA 394 :      This routine allocates the SFSB using an irab to stall on. This only
00EA 395 :      occurs in connect when the original sfsb lock has been given away to
00EA 396 :      become a system lock for a global buffer section.
00EA 397 :      The SFSB is allocated one per IFAB,
00EA 398 :      and is used to contain the necessary local lock manager context for
00EA 399 :      locking the shared file. This will be allocated even when sharing is
00EA 400 :      only multi-stream, as the lock manager will be used in that case also.
00EA 401 :
00EA 402 :      A protected write lock is requested on the file also.
00EA 403 :
00EA 404 :      Calling Sequence:
00EA 405 :
00EA 406 :          BSBW      RM$INIT_SFSB_IRB
00EA 407 :
00EA 408 :      Input Parameters:
00EA 409 :
00EA 410 :          r10      ifab address
00EA 411 :          r9       irab address
00EA 412 :
00EA 413 :      Implicit Inputs:
00EA 414 :
00EA 415 :          none
00EA 416 :
00EA 417 :      Output Parameters:
00EA 418 :
00EA 419 :          r0       status code
00EA 420 :
00EA 421 :      Implicit Outputs:
00EA 422 :
00EA 423 :          sfsb allocated and initialized, a PW lock made on it
00EA 424 :          if an enq error occurs, the $FAB stv field has the system service
00EA 425 :          code...
00EA 426 :
00EA 427 :      Completion Codes:
00EA 428 :
00EA 429 :          suc, dme, enq, upi and shr
00EA 430 :
00EA 431 :      Side Effects:
00EA 432 :
00EA 433 :          r1-r7 destroyed
00EA 434 :
00EA 435 :      --
00EA 436 :
00EA 437 : RM$INIT_SFSB_IRB::
00EA 438 :
00EA 439 :
00EA 440 :      Lock the shared file protected write. This gives a parent_id to any
00EA 441 :      subsequent record locks.
00EA 442 :
00EA 443 :
00EA 444 : 10$:      JSB      RM$SETEFN          ; Allocate event flag
```

00000000'EF 16



```
01  BA 00F0 445      POPR  #^M<R0>          ; Get the flag
      00F2 446      $ENQ_S LKMODE = #LCK$K_PWMODE,-
      00F2 447      ACMODE = #PSL$C_EXEC,-
      00F2 448      EFN = R0,-
      00F2 449      ASTADR = RMS$STALLAST,-
      00F2 450      ASTPRM = R9,-
      00F2 451      LKSB = SFSB$L_LKSB(R4),-
      00F2 452      RESNAM = SFSB$Q_FILENAME(R4),-
      00F2 453      FLAGS = #LCK$M_VALBLK!LCK$M_SYNCSTS!LCK$M_SYSTEM
      0114 454
0689 1B 50  E9 0114 455      BLBC  R0,40$          ; Error?
      8F 50  B1 0117 456      CMPW  R0,#SS$_SYNCH      ; Did it complete?
      03 13 011C 457      BEQL  20$          ; Yes, so do not stall
      FEDF' 30 011E 458      BSBW  RMS$STALL_LOCK      ; Stall for the lock
      50 2C A4 3C 0121 459 20$: MOVZWL SFSB$W_STATUS(R4),R0 ; Get final status
      OA 50  E9 0125 460      BLBC  R0,40$          ; Did it work?
70 AA 3C A4 7D 0128 461 25$: MOVQ  SFSB$L_HBK(R4),IFB$L_HBK(R10) ; Store EOF.
      OA A4 04 90 012D 462      MOVB  #LCK$K_PWMODE,SFSB$B_CURMODE(R4) ; Save the current lock value
      05 0131 463      RSB
      0132 464
      0132 465
      0132 466 ;
      0132 467 ; An error occurred on the ENQ. Check to see if we can recover from it.
      0132 468 ;
      0132 469
      0132 470 40$:
50  OE0A 8F  B1 0132 471      CMPW  #SS$_DEADLOCK,R0      ; Was it deadlock?
      B1 13 0137 472      BEQL  10$          ; Try it again if it was.
50  09F0 8F  B1 0139 473      CMPW  #SS$_VALNOTVALID,R0    ; Did Lock manager gave us old value
      0B 12 013E 474      BNEQ  45$          ; No, go map the error.
      00000001'EF 16 0140 475      JSB  VALIDATE_EBK_HBK      ; Yes, validate the data.
      DF 50  E8 0146 476      BLBS  R0,25$          ; Continue if successful
      05 11 0149 477      BRB  50$          ; else map error.
      014B 478 45$: RMSERR ENQ,R1      ; default to ENQ error for RMS$MAPERR
      FEAD' 30 0150 479 50$: BSBW  RMS$MAPERR      ; go map the error
      05 0153 480      RSB
      0154 481
```

```
0154 483 .SBTTL CHECK_SHARE_OPTIONS
0154 484
0154 485 :++
0154 486 :
0154 487 : CHECK_SHARE_OPTIONS
0154 488 :
0154 489 : This routine checks the sharing options in order to see if
0154 490 : they are valid. If we are the first in then simply stuff the
0154 491 : fields and return.
0154 492 :
0154 493 : Input Parameters:
0154 494 :
0154 495 : r4 - sfsb
0154 496 : r8 - fab
0154 497 : r9 - ifab
0154 498 :
0154 499 : Output Parameters:
0154 500 : none
0154 501 :
0154 502 : Routine Value:
0154 503 :
0154 504 : suc or shr
0154 505 :
0154 506 : Side Effects:
0154 507 :
0154 508 : r1 destroyed
0154 509 :
0154 510 :--
0154 511
0154 512 CHECK_SHARE_OPTIONS:
0154 513
0154 514 ASSUME SFSB$B_SHR EQ SFSB$B_FAC+1
0154 515
34 A4 B5 0154 516 TSTW SFSB$B_FAC(R4) ; are we the first in?
07 12 0157 517 BNEQ 10$ ; No, so do checks
0159 518
0159 519 ASSUME FAB$B_SHR EQ FAB$B_FAC+1
0159 520 ASSUME SFSB$B_SHR EQ SFSB$B_FAC+1
0159 521
34 A4 16 A8 B0 0159 522 MOVW FAB$B_FAC(R8),SFSB$B_FAC(R4) ; save the flags for the next guy
16 11 015E 523 BRB SHREXT ; get out
0160 524
0160 525 ASSUME FAB$V_PUT EQ FAB$V_SHRPUT
0160 526 ASSUME FAB$V_GET EQ FAB$V_SHRGET
0160 527 ASSUME FAB$V_DEL EQ FAB$V_SHRDEL
0160 528 ASSUME FAB$V_UPD EQ FAB$V_SHRUPD
0160 529
50 16 A8 35 A4 8B 0160 530 10$: BICB3 SFSB$B_SHR(R4),FAB$B_FAC(R8),R0 ; is our access compatible?
50 50 0F 93 0166 531 BITB #SHRBITS,R0 ; are they different
0F 12 0169 532 BNEQ SHRERR ; yes, then error
50 34 A4 17 A8 8B 016B 533 BICB3 FAB$B_SHR(R8),SFSB$B_FAC(R4),R0 ; is their access compatible?
50 50 0F 93 0171 534 BITB #SHRBITS,R0 ; are any different
04 12 0174 535 BNEQ SHRERR ; yes, then exit
0176 536 SHREXT: RMSSUC ; exit success!
05 0179 537 RSB
017A 538
017A 539 SHRERR: RMSERR INCOMP$HR ; this is an error
```



RMOSHARE  
V04-000

SHARING ROUTINES  
CHECK\_SHARE\_OPTIONS

F 6

16-SEP-1984 00:37:46  
5-SEP-1984 16:22:33

VAX/VMS Macro V04-00  
[RMS.SRC]RMOSHARE.MAR;1

Page 12  
(5)

05 017F 540  
0180 541

RSB

; return the bad news

```
0180 543 .SBTTL File locking routines
0180 544
0180 545 :++
0180 546
0180 547 RMSRESTORE_LOCK
0180 548 RMSRAISE_LOCK
0180 549 RMSLOWER_SYSLOCK
0180 550 RMSLOWER_LOCK
0180 551
0180 552 These routines modify the file lock mode.
0180 553
0180 554 Calling Sequence:
0180 555
0180 556 BSBW RMSRESTORE_LOCK - Restore the lock mode
0180 557 BSBW RMSRAISE_LOCK - Get a protected write lock on the file
0180 558 BSBW RMSLOWER_SYSLOCK - Convert file lock to a system lock (held at NL)
0180 559 BSBW RMSLOWER_LOCK - Get a concurrent read lock on the file
0180 560
0180 561 Input Parameters:
0180 562
0180 563 r9 ifab/irab address
0180 564
0180 565 Implicit Inputs:
0180 566 none
0180 567
0180 568 Output Parameters:
0180 569
0180 570 r0 status code
0180 571
0180 572 Implicit Outputs:
0180 573 none
0180 574
0180 575 Completion Codes:
0180 576
0180 577 suc, enq
0180 578
0180 579 Side Effects:
0180 580
0180 581 The ifab eof information is stored in resource block (lower lock)
0180 582 or updated from the resource block (raise lock)
0180 583 Could stall
0180 584
0180 585 :--
0180 586
0180 587 RMSRESTORE_LOCK:: ; Restore the previous lock mode
0180 588 PUSH R1,R2,R3,R4,R5,R10>
0180 589 MNEGL #1,R0 ; Signal this is a restore
0180 590 MOVL #LCK$M_SYNCSTS!LCK$M_CONVERT!LCK$M_VALBLK,R3
0180 591 BRB SET_LOCK
0180 592
0180 593 RMSRAISE_LOCK:: ; Get a protected write lock on the
0180 594 PUSH R1,R2,R3,R4,R5,R10>
0180 595 MOVL #LCK$M_PMODE,R0 ; Stuff the lock mode in R0
0180 596 MOVL #LCK$M_SYNCSTS!LCK$M_CONVERT!LCK$M_VALBLK,R3
0180 597 BRB SET_LOCK
0180 598
0180 599 RMSLOWER_SYSLOCK:: ; Convert lock to system lock at NL.
```

043E 8F BB 0180 588  
50 01 CE 0184 589  
53 0B D0 0187 590  
26 11 018A 591  
018C 592  
018C 593  
043E 8F BB 018C 594  
50 04 D0 0190 595  
53 0B D0 0193 596  
1A 11 0196 597  
0198 598  
0198 599



```
53 0000004B 043E 8F BB 0198 600  PUSHR  #^M<R1,R2,R3,R4,R5,R10>
    50 00 D0 019C 601  MOVL  #LCK$K_NLMODE,R0          ; Stuff lock mode in R0.
    8F D0 019F 602  MOVL  #LCK$M_SYNCSTS!LCK$M_CONVERT!LCK$M_VALBLK!LCK$M_CVTSYS,R3
    0A 11 01A6 603  BRB    SET_LOCK
    01A8 604
    01A8 605  RMSLOWER LOCK::          ; Get a concurrent read lock on the
    043E 8F BB 01A8 606  PUSHR  #^M<R1,R2,R3,R4,R5,R10>
    50 01 D0 01AC 607  MOVL  #LCK$K_CRMODE,R0          ; Stuff the lock mode in R0
    53 0B D0 01AF 608  MOVL  #LCK$M_SYNCSTS!LCK$M_CONVERT!LCK$M_VALBLK,R3
    01B2 609
    01B2 610  SET_LOCK:
    5A 59 D0 01B2 611  MOVL  R9,R10          ; Move ifab into r10 for stall
    01B5 612
    01B5 613  ASSUME  <IFB$C_BID&1> EQ 1          ; in case it's really irab
    01B5 614  ASSUME  <IRB$C_BID&1> EQ 0
    01B5 615  ASSUME  IFB$B_BID EQ IRB$B_BID
    01B5 616
    03 08 AA E8 01B5 617  BLBS  IFB$B_BID(R10),1$          ; Do we have a ifab or irab
    5A 6A D0 01B9 618  MOVL  IRB$L_IFAB_LNK(R10),R10      ; Get ifab
    54 78 AA D0 01BC 619 1$: MOVL  IFB$L_SFSB_PTR(R10),R4    ; Get sfsb
    63 13 01C0 620  BEQL  ENQSUC          ; If the file is not shared
    01C2 621          ; ignore the request
    01C2 622
    55 50 D0 01C2 623  MOVL  R0,R5          ; Save lock value
    04 18 01C5 624  BGEQ  10$          ; Branch if not restore
    55 0B A4 90 01C7 625  MOVB  SFSB$B_PREMODE(R4),R5      ; Restore previous mode
    01CB 626
    01CB 627  ;
    01CB 628  ; Save the current mode of the lock in case this is a conversion
    01CB 629  ; for a I/O stall
    01CB 630  ;
    0B A4 0A A4 90 01CB 631 10$: MOVB  SFSB$B_CURMODE(R4),SFSB$B_PREMODE(R4)
    01D0 632
    01D0 633  ;
    01D0 634  ; See if we already have the lock being requested, if so exit
    01D0 635  ; NOTE: If someone expects to get current information in the
    01D0 636  ; lock value block by requesting a lock of the same mode
    01D0 637  ; will be disappointed by this.
    01D0 638  ;
    01D0 639  ;
    01D0 640
    0A A4 55 91 01D0 641  CMPB  R5,SFSB$B_CURMODE(R4)
    4F 13 01D4 642  BEQL  ENQSUC
    01D6 643
    01D6 644  ;
    01D6 645  ; Store the eof info into the value block
    01D6 646  ;
    01D6 647  ;
    01D6 648  ASSUME  IFB$L_EBK EQ <IFB$L_HBK + 4>
    01D6 649  ASSUME  SFSB$C_EBK EQ <SFSB$C_HBK + 4>
    01D6 650
    3C A4 70 AA 7D 01D6 651  MOVQ  IFB$L_HBK(R10),SFSB$L_HBK(R4)
    50 13 01DB 652  BEQL  BAD_EBKHBK
    01DD 653
    01DD 654  ;
    01DD 655  ; Do the ENQ conversion.
    01DD 656  ;
```

```
FE20' 30 01DD 657
01 BA 01DD 658 ENQ: BSBW RMS$SETEFN ; Allocate event flag
; Get the flag
01E0 659 POPR #^M<R0>
01E2 660 $ENQ_S EFN = R0,-
01E2 661 LKMODE = R5,-
01E2 662 LKSB = SFSB$L_LKSB(R4),-
01E2 663 FLAGS = R3,-
01E2 664 ASTADR = RMS$STALLAST,-
01E2 665 ASTPRM = R9
0202 666
0689 36 50 E9 0202 667 BLBC R0,ENQERR ; We ok?
8F 50 B1 0205 668 CMPW R0,#SS$_SYNCH ; Did it complete?
07 13 020A 669 BEQL 10$ ; Yes, so do not stall
08 BB 020C 670 PUSHR #^M<R3> ; Save ENQ flags around stall
FDEF' 30 020E 671 BSBW RMS$STALL_LOCK ; Stall for the lock
08 BA 0211 672 POPR #^M<R3> ; Restore ENQ flags.
50 2C A4 3C 0213 673 10$: MOVZWL SFSB$W STATUS(R4),R0 ; Get the final status
21 50 E9 0217 674 BLBC R0,ENQERR ; Branch on failure
021A 675
021A 676
021A 677 ; Store the eof info into the ifb from the value block
021A 678 ;
021A 679 ;
021A 680
021A 681 ASSUME IFB$L_EBK EQ <IFB$L_HBK + 4>
021A 682 ASSUME SFSB$C_EBK EQ <SFSB$C_HBK + 4>
021A 683
70 AA 3C A4 7D 021A 684 HBKEBK: MOVQ SFSB$L_HBK(R4),IFB$L_HBK(R10)
13 13 021F 685 BEQL BAD_EBKHBK1
0221 686
0A A4 55 90 0221 687 ALTSUC: MOVB R5,SFSB$B_CURMODE(R4) ; Save the current lock value
0225 688 ENQSUC: RMSSUC ; Signal success
043E 8F BA 0228 689 ENQRET: POPR #^M<R1,R2,R3,R4,R5,R10> ; Restore registers
05 05 022C 690 RSB ; Return
022D 691
022D 692 BAD_EBKHBK:
022D 693 RMSPBUG FTL$_BADEBKHBK
0234 694 BAD_EBKHBK1:
0234 695 RMSPBUG FTL$_BADEBKHBK
023B 696
023B 697 ENQERR:
50 0E0A 8F B1 023B 698 CMPW #SS$_DEADLOCK,R0 ; Was it deadlock?
9B 13 0240 699 BEQL ENQ ; Try it again if it was.
50 09F0 8F B1 0242 700 CMPW #SS$_VALNOTVALID,R0 ; Did Lock manager gave us old value
0B 12 0247 701 BNEQ 10$ ; No, go map error.
00000001'EF 16 0249 702 JSB VALIDATE_EBK_HBK ; Yes, get correct hbk/ebk values.
C8 50 E8 024F 703 BLBS R0,HBKEBK
05 11 0252 704 BRB 20$
0254 705 10$: RMSERR ENQ,R1 ; default to ENQ error for RMS$MAPERR
FDA4' 30 0259 706 20$: BSBW RMS$MAPERR ; go map the error
FFC9 31 025C 707 BRW ENQRET ; and return
025F 708
```



```

025F 710      .SBTTL RMSRLS_SFSB - Deallocate the SFSB
025F 711
025F 712      :++
025F 713      :
025F 714      : RMSRLS_SFSB
025F 715      :
025F 716      : This routine deallocates the SFSB and dequeues the file lock.
025F 717      :
025F 718      : Calling Sequence:
025F 719      :
025F 720      : BSBW RMSRLS_SFSB
025F 721      :
025F 722      : Input Parameters:
025F 723      :
025F 724      : r9 ifab address
025F 725      :
025F 726      : Implicit Inputs:
025F 727      :
025F 728      : none
025F 729      :
025F 730      : Output Parameters:
025F 731      :
025F 732      : none
025F 733      :
025F 734      : Implicit Outputs:
025F 735      :
025F 736      : none
025F 737      :
025F 738      : Completion Codes:
025F 739      :
025F 740      : none
025F 741      :
025F 742      : Side Effects:
025F 743      :
025F 744      : none
025F 745      :
025F 746      :--
025F 747      :
025F 748      : RMSRLS_SFSB::
025F 749      : PUSH  #^M<R1,R4> ; save work registers
12 BB 0261 750
54 78 A9 D0 0261 751      MOVL IFB$L_SFSB_PYR(R9),R4 ; get address of sfsb
28 13 0265 752      BEQL 30$ ; exit if none
0267 753
0267 754      :
0267 755      : Store the eof info into the value block
0267 756      :
0267 757      :
0267 758      : ASSUME IFB$L_EBK EQ <IFB$L_HBK + 4>
0267 759      : ASSUME SFSB$C_EBK EQ <SFSB$C_HBK + 4>
3C A4 70 A9 7D 0267 760      MOVQ IFB$L_HBK(R9),SFSB$L_HBK(R4)
026C 761
026C 762
026C 763      :
026C 764      : If a recovery-unit is active on this file then save the file lock
026C 765      :
026C 766

```

```

08 00A2 C9 02 E1 026C 767 BBC #IFB$V RUP,IFB$B_JNLFLG2(R9),10$; branch if no RU in prog
FF33 30 0272 768 BSBW RM$LOWER_LOCK ; lower the lock to correct mode
FD88 30 0275 769 BSBW RM$SAVE_FL ; go save the file lock
OF 11 0278 770 BRB 20$
027A 771
027A 772 ;
027A 773 ; Deq the lock
027A 774 ;
027A 775
027A 776 10$ : $DEQ_S LKID = SFSB$L_LOCK_ID(R4),-
027A 777 VALBLK = SFSB$L_LVB(R4)
0289 778
0289 779 ;
0289 780 ; Deallocate the sfsb
0289 781 ;
0289 782
FD74 30 0289 783 20$ : BSBW RM$RETLK1 ; address in r4
78 A9 D4 028C 784 CLRL IFB$L_SFSB_PTR(R9) ; clear the ifab pointer to it
028F 785
12 BA 028F 786 30$ : POPR #^M<R1,R4> ; restore registers
05 0291 787 RSB ; return to caller
0292 788

```



```
0292 790 .SBTTL RMS$INIT_GBSB - Allocate and init the GBSB
0292 791
0292 792 :++
0292 793 :
0292 794 : RMS$INIT_GBSB
0292 795 :
0292 796 : This routine allocates the GBSB. The GBSB is allocated one per IFAB,
0292 797 : and is used to contain the necessary local lock manager context for
0292 798 : locking a global section used for global buffers.
0292 799 :
0292 800 : An exclusive lock is requested on the global section.
0292 801 :
0292 802 : Calling Sequence:
0292 803 :
0292 804 : BSBW RMS$INIT_GBSB
0292 805 :
0292 806 : Input Parameters:
0292 807 :
0292 808 : r10 ifab address
0292 809 : r9 irab address
0292 810 :
0292 811 : Implicit Inputs:
0292 812 :
0292 813 : none
0292 814 :
0292 815 : Output Parameters:
0292 816 :
0292 817 : r0 status code
0292 818 :
0292 819 : Implicit Outputs:
0292 820 :
0292 821 : gbsb allocated and initialized, an EX lock made on it
0292 822 : if an enq error occurs, the $FAB stv field has the system service
0292 823 : code...
0292 824 :
0292 825 : Completion Codes:
0292 826 :
0292 827 : suc, dme, enq
0292 828 :
0292 829 : Side Effects:
0292 830 :
0292 831 : None...
0292 832 :
0292 833 :--
0292 834 :
0292 835 RMS$INIT_GBSB::
0292 836 PUSH R1,R2,R3,R4,R5,R6,R7 ; save work registers
0292 837 MOVZBL #GBSB$C_BLN,R2 ; get block length to allocate
0292 838 MOVL R10,R1 ; allocate from same page as ifab
0292 839 BSBW RMS$GETSPC ; allocate it
0292 840 BLBS R0,1$ ; branch if ok
0292 841 RMSERR DME ; dynamic memory exhausted
0292 842 BRW 25$ ; return error to caller
0292 843 1$: MOVL R1,IFB$L_GBSB_PTR(R10) ; address of GBSB in IFAB
0292 844 ASSUME GBSB$B_BCN EQ GBSB$B_BID+1
0292 845 MOVW #GBSB$C_BID+<GBSB$C_BLN@6>,- ; fill in block length and id
0292 846 GBSB$B_BID(R1)
```

|          |    |      |     |           |                                |                                   |
|----------|----|------|-----|-----------|--------------------------------|-----------------------------------|
| 00FE 8F  | BB | 0292 | 836 | PUSH      | R1,R2,R3,R4,R5,R6,R7           | ; save work registers             |
| 52 44 8F | 9A | 0296 | 837 | MOVZBL    | #GBSB\$C_BLN,R2                | ; get block length to allocate    |
| 51 5A    | D0 | 029A | 838 | MOVL      | R10,R1                         | ; allocate from same page as ifab |
| FD60     | 30 | 029D | 839 | BSBW      | RMS\$GETSPC                    | ; allocate it                     |
| 08 50    | E8 | 02A0 | 840 | BLBS      | R0,1\$                         | ; branch if ok                    |
|          |    | 02A3 | 841 | RMSERR    | DME                            | ; dynamic memory exhausted        |
| 0078     | 31 | 02A8 | 842 | BRW       | 25\$                           | ; return error to caller          |
| 7C AA 51 | D0 | 02AB | 843 | 1\$: MOVL | R1,IFB\$L_GBSB_PTR(R10)        | ; address of GBSB in IFAB         |
|          |    | 02AF | 844 | ASSUME    | GBSB\$B_BCN EQ GBSB\$B_BID+1   |                                   |
| 1109 8F  | B0 | 02AF | 845 | MOVW      | #GBSB\$C_BID+<GBSB\$C_BLN@6>,- |                                   |
| 08 A1    |    | 02B3 | 846 |           | GBSB\$B_BID(R1)                | ; fill in block length and id     |

```

02B5 847
02B5 848
02B5 849 : Make a descriptor of the first two longwords in GBSB, pointing to RESNAM
02B5 850 : field. Fill RESNAM with copy of RESNAM from SFSB.
02B5 851 :
02B5 852
0C A1 DE 02B5 853 MOVAL GBSB$T_RESNAM(R1),- ; Move address of RESNAM to descript
04 A1 02B8 854 GBSB$L_ADDRESS(R1)
52 78 AA D0 02BA 855 MOVL IFB$L_SFSB_PTR(R10),R2 ; Move SFSB address to R2.
62 B0 02BE 856 MOVW SFSB$Q_NAME_LEN(R2),- ; Move length of RESNAM into desc.
61 02C0 857 GBSB$W_NAME_LEN(R1)
61 28 02C1 858 MOVW GBSB$W_NAME_LEN(R1),-
0C A2 02C3 859 SFSB$T_RESNAM(R2),- ; Move the SFSB RESNAM to the GBSB
0C A1 02C5 860 GBSB$T_RESNAM(R1) ; resnam field to name the lock.
02C7 861
54 7C AA D0 02C7 862 MOVL IFB$L_GBSB_PTR(R10),R4 ; restore GBSB address into R4
02CB 863
00000000'GF D5 02CB 864 TSTL G^EXE$GL_SYSID_LOCK ; Make sure we have a parent lock.
07 12 02D1 865 BNEQ S$ ; Yes, continue
02D3 866 RMSPBUG FTL$_NOPARENT ; No parent, boom....
02DA 867
02DA 868 : Lock the global section for exclusive access.
02DA 869 :
02DA 870 :
02DA 871
00000000'EF 16 02DA 872 S$: JSB RMS$SETEFN ; Allocate event flag
01 BA 02E0 873 POPR #^M<R0> ; Get the flag
02E2 874 SENQ_S LKMODE = #LCK$K_EXMODE,-
02E2 875 ACMODE = #PSL$C_EXEC,-
02E2 876 EFN = R0,-
02E2 877 ASTADR = RMS$STALLAST,-
02E2 878 ASTPRM = R9,-
02E2 879 PARID = G^EXE$GL_SYSID_LOCK,-
02E2 880 LKSB = GBSB$L_LRSB(R4),-
02E2 881 RESNAM = GBSB$Q_FILENAME(R4),-
02E2 882 FLAGS = #LCK$M_VALBLK!LCK$M_SYNCSTS!LCK$M_SYSTEM
0308 883
0689 1D 50 E9 0308 884 BLBC R0,40$ ; Error?
8F 50 B1 030B 885 CMPW R0,#SS$_SYNCH ; Did it complete?
03 13 0310 886 BEQL 10$ ; YES, do not stall
FCEB' 30 0312 887 BSBW RMS$STALL_LOCK ; Stall for the lock
0315 888 10$:
50 2C A4 3C 0315 889 MOVZWL GBSB$W_STATUS(R4),R0 ; Get final status
0C 50 E9 0319 890 BLBC R0,40$ ; Did it work?
0A A4 05 90 031C 891 20$: MOVW #LCK$K_EXMODE,GBSB$B_CURMODE(R4) ; Save the current lock value
00FE 8F BA 0320 892 RMSSUC ; indicate success
05 0323 893 25$: POPR #^M<R1,R2,R3,R4,R5,R6,R7> ; restore registers
0327 894 RSB ; return to caller
0328 895
0328 896 :
0328 897 : An error occurred on the ENQ. See if we can recover from it.
0328 898 :
0328 899 :
0328 900 40$:
50 0E0A 8F B1 0328 901 CMPW #SS$_DEADLOCK,R0 ; Was it deadlock?
AB 13 032D 902 BEQL S$ ; Try it again if it was.
50 09F0 8F B1 032F 903 CMPW #SS$_VALNOTVALID,R0 ; Did Lock manager gave us old value

```



|       |    |      |     |        |             |
|-------|----|------|-----|--------|-------------|
| E6    | 13 | 0334 | 904 | BEQL   | 20\$        |
|       |    | 0336 | 905 | RMSERR | ENQ,R1      |
| FCC2' | 30 | 033B | 906 | BSBW   | RMS\$MAPERR |
| E3    | 11 | 033E | 907 | BRB    | 25\$        |
|       |    | 0340 | 908 |        |             |

; Yes, treat as alternate success  
; default to ENQ error for RMS\$MAPERR  
; go map the error  
; and return



```
0340 910      .SBTTL Global Buffer Section locking routines
0340 911
0340 912      :++
0340 913
0340 914      RMSRAISE_GBS_LOCK
0340 915      RMSLOWER_GBS_LOCK
0340 916
0340 917      These routines modify the lock mode on a global buffer section.
0340 918
0340 919      Calling Sequence:
0340 920
0340 921      BSBW      RMSRAISE_GBS_LOCK      - Get an exclusive lock on the section
0340 922      BSBW      RMSLOWER_GBS_LOCK    - Get a concurrent read lock on the section
0340 923
0340 924      Input Parameters:
0340 925
0340 926      r9        ifab/irab address
0340 927
0340 928      Implicit Inputs:
0340 929      none
0340 930
0340 931      Output Parameters:
0340 932
0340 933      r0        status code
0340 934
0340 935      Implicit Outputs:
0340 936      none
0340 937
0340 938      Completion Codes:
0340 939
0340 940      suc, enq
0340 941
0340 942      Side Effects:
0340 943
0340 944      Could stall
0340 945
0340 946      :--
0340 947
0340 948      RMSRAISE_GBS_LOCK::
50    05    D0 0340 949      MOVL      #LCK$K_EXMODE,R0      ; Convert GBS lock to EX.
0340 950      BRB      TAKE_GBS_LOCK      ; Place lock mode in R0.
0345 951
0345 952      RMSLOWER_GBS_LOCK::
50    00    D0 0345 953      MOVL      #LCK$K_NLMODE,R0      ; Convert GBS lock to NL.
0348 954      ; Place lock mode in R0.
0348 955      TAKE_GBS_LOCK:
043E 8F    BB 0348 956      PUSHR     #^M<R1,R2,R3,R4,R5,R10>
55    50    D0 0348 957      MOVL      R0,R5      ; Save lock value
5A    59    D0 034C 957      MOVL      R9,R10     ; Move ifab into r10 for stall
034F 958      MOVL      IFB$B_BID EQ 1      ; in case it's really irab
0352 959      ASSUME     <IFB$C_BID&1> EQ 1
0352 960      ASSUME     <IRB$C_BID&1> EQ 0
0352 961      ASSUME     IFB$B_BID EQ IRB$B_BID
0352 962      BLBS      IFB$B_BID(R10),10$
0356 963      MOVL      IRB$B_IFAB_LNK(R10),R10
54    7C    AA D0 0359 964 10$: MOVL      IFB$B_GBSB_PTR(R10),R4
035D 965      BEQL      50$
035F 966
```



```
035F 967 :  
035F 968 : See if we already have the lock being requested, if so exit  
035F 969 :  
035F 970 :  
0A A4 55 91 035F 971 CMPB R5,GBSB$B_CURMODE(R4)  
3D 13 0363 972 BEQL 50$  
0365 973 :  
0365 974 :  
0365 975 : Convert the lock on the global buffer section  
0365 976 :  
0365 977 :  
FC98' 30 0365 978 20$: BSBW RM$SETEFN ; Allocate event flag.  
01 BA 0368 979 POPR #^M<R0> ; Get the flag.  
036A 980 $ENQ_S EFN = R0,-  
036A 981 LKMODE = R5,-  
036A 982 LKSB = GBSB$L_LKSB(R4),-  
036A 983 FLAGS = #LCK$M_SYNCSTS!LCK$M_SYSTEM!LCK$M_CONVERT!LCK$M_VALBLK,-  
036A 984 ASTADR = RM$STACLAST,-  
036A 985 ASTPRM = R9  
038A 986 :  
0689 1D 50 E9 038A 987 BLBC R0,70$ ; We ok?  
8F 50 B1 038D 988 CMPW R0,#SS$_SYNCH ; Did it complete?  
03 13 0392 989 BEQL 30$ ; YES, so do not stall  
FC69' 30 0394 990 BSBW RM$STALL_LOCK ; Stall for the lock  
0397 991 30$:  
50 2C A4 3C 0397 992 MOVZWL GBSB$W_STATUS(R4),R0 ; Get the final status  
OC 50 E9 039B 993 BLBC R0,70$ ; Branch on failure  
0A A4 55 90 039E 994 40$: MOVB R5,GBSB$B_CURMODE(R4) ; Save the current lock value  
043E 8F BA 03A2 995 50$: RMSSUC ; Signal success  
05 03A5 996 60$: POPR #^M<R1,R2,R3,R4,R5,R10> ; Restore registers  
03A9 997 RSB ; Return  
03AA 998  
03AA 999  
03AA 1000 70$:  
50 OE0A 8F B1 03AA 1001 CMPW #SS$_DEADLOCK,R0 ; Was it deadlock?  
B4 13 03AF 1002 BEQL 20$ ; Try it again if it was.  
50 09F0 8F B1 03B1 1003 CMPW #SS$_VALNOTVALID,R0 ; Did Lock manager gave us old value  
E6 13 03B6 1004 BEQL 40$ ; Yes, treat as alternate success  
03B8 1005 RMSERR ENQ,R1 ; Default to ENQ error for RM$MAPERR  
FC40' 30 03BD 1006 BSBW RM$MAPERR ; Go map the error  
E3 11 03C0 1007 BRB 60$ ; and return  
03C2 1008
```



```
03C2 1010      .SBTTL RMSRLS_GBSB - Deallocate the GBSB and dequeue the lock on it
03C2 1011
03C2 1012      :++
03C2 1013      :
03C2 1014      : RMSRLS_GBSB
03C2 1015      :
03C2 1016      : This routine deallocated the GBSB and then dequeues the lock it had on
03C2 1017      : the global buffer section. The dequeue also writes out the lock value
03C2 1018      : block to the lock manager.
03C2 1019      :
03C2 1020      : Calling Sequence:
03C2 1021      :
03C2 1022      : BSBW RMSRLS_GBSB
03C2 1023      :
03C2 1024      : Input Parameters:
03C2 1025      :
03C2 1026      : r9 irab/ifab address
03C2 1027      :
03C2 1028      : Implicit Inputs:
03C2 1029      : none
03C2 1030      :
03C2 1031      : Output Parameters:
03C2 1032      :
03C2 1033      : r0 status code
03C2 1034      :
03C2 1035      : Implicit Outputs:
03C2 1036      : none
03C2 1037      :
03C2 1038      : Completion Codes:
03C2 1039      :
03C2 1040      : suc, deq
03C2 1041      :
03C2 1042      : Side Effects:
03C2 1043      :
03C2 1044      : none
03C2 1045      :
03C2 1046      :--
03C2 1047
03C2 1048 RMSRLS_GBSB::
0412 8F BB 03C2 1049      PUSHR #^M<R1,R4,R10>
5A 59 D0 03C6 1050      MOVL R9,R10 ; Move ifab into r10
03C9 1051
03C9 1052      ASSUME <IFB$C_BID&1> EQ 1 ; in case it's really irab
03C9 1053      ASSUME <IRB$C_BID&1> EQ 0
03C9 1054      ASSUME IFB$B_BID EQ IRB$B_BID
03C9 1055
03 08 AA E8 03C9 1056      BLBS IFB$B_BID(R10),10$ ; Do we have a ifab or irab
5A 6A D0 03CD 1057      MOVL IRB$L_IFAB_LNK(R10),R10 ; Get ifab
54 7C AA D0 03D0 1058 10$: MOVL IFB$L_GBSB_PTR(R10),R4 ; Get gbsb
19 13 03D4 1059      BEQL 30$ ; Skip if none.
0088 CA D4 03D6 1060 20$: CLRL IFB$L_GBH_PTR(R10) ; Indicate that global section is go
03DA 1061      $DEQ_S LKID = GBSB$L_LOCK_ID(R4),- ; Dequeue the lock,
03DA 1062      VALBLK = GBSB$L_LKSB+8(R4) ; writing out the lock value block.
7C AA D4 03E9 1063      CLRL IFB$L_GBSB_PTR(R10) ; Indicate that GBSB is gone.
FC11 30 03EC 1064      BSBW RM$RETLK1 ; Deallocate the GBSB, address in R4
0412 8F BA 03EF 1065 30$: POPR #^M<R1,R4,R10>
05 03F3 1066      RSB ; Return to caller.
```



RMOSHARE  
V04-000

SHARING ROUTINES

RMSRLS\_GBSB - Deallocate the GBSB and de

03F4 1067

E 7

16-SEP-1984 00:37:46  
5-SEP-1984 16:22:33

VAX/VMS Macro V04-00  
[RMS.SRC]RMOSHARE.MAR;1

Page 24  
(10)

RM  
VO

```
03F4 1069 .SBTTL VALIDATE_EBK_HBK
03F4 1070 :++
03F4 1071 :
03F4 1072 : VALIDATE_EBK_HBK
03F4 1073 :
03F4 1074 : This routine reads the record attributes for a file from the disk to see
03F4 1075 : if the value block or the disk contains the most up to date information,
03F4 1076 : and move the latest information into the SFSB for use in the value block
03F4 1077 : and ifab.
03F4 1078 :
03F4 1079 : Input Parameters:
03F4 1080 :
03F4 1081 :     r9 - irab/ifab address
03F4 1082 :
03F4 1083 : Output Parameters:
03F4 1084 :     none
03F4 1085 :
03F4 1086 : Routine Value:
03F4 1087 :
03F4 1088 :     Any valid RMS or SYSTEM error code.
03F4 1089 :
03F4 1090 : Side Effects:
03F4 1091 :
03F4 1092 :     none
03F4 1093 :
03F4 1094 : --
03F4 1095 :
03F4 1096 : $NEWPSECT      RMSRMSMISC
0000 1097
0000000C 0000 1098 ATR_LIST_LEN = 12
0000 6A 0000 1099 BUF_LEN:=BYTE ATR_LIST_LEN+FHCLEN+8+FIB$C_LENGTH
0001 1100
0001 1101 :
0001 1102 : Note that the buffer allocated in this routine contains the following
0001 1103 : structures, all of which are used as parameters to the file system.
0001 1104 :     1. attribute list (last longword in list is a zero-longword)
0001 1105 :     2. record attributes buffer
0001 1106 :     3. fib descriptor (8 bytes)
0001 1107 :     4. fib
0001 1108 :
0001 1109 :
0001 1110 VALIDATE_EBK_HBK:
043E 8F BB 0001 1111 PUSHR #^M<R1,R2,R3,R4,R5,R10>
0005 1112
0005 1113 ASSUME SFSB$L_EBK EQ <SFSB$L_HBK + 4>
0005 1114 ASSUME FAT$L_EFBLK EQ <FAT$L_RIBLK + 4>
0005 1115 ASSUME <IFB$C_BID&1> EQ 1
0005 1116 ASSUME <IRB$C_BID&1> EQ 0
0005 1117 ASSUME IFB$B_BID EQ IRB$B_BID
0005 1118
0005 1119 MOVL R9,R10 ; Move ifab into r10 for stall
03 08 AA E8 0008 1120 BLBS IFB$B_BID(R10),1$ ; Do we have a ifab or irab
0000 5A 6A D0 000C 1121 MOVL IRB$L_IFAB_LNK(R10),R10 ; Get ifab
52 EE AF 9A 000F 1122 1$: MOVZBL BUF_LEN,R2 ; r2 = length of buffer to alloc
00000000 EF 16 0013 1123 JSB RMSGETSPC1 ; Get the space (returned in R1)
08 50 E8 0019 1124 BLBS R0,10$ ; Error?
001C 1125 RMSERR DME,R1 ; Yes, map it and return.
```



```
61 00040016 8F 008E 31 0021 1126
04 A1 0C A1 9E 0024 1127 10$:
53 22 A1 DE 0028 1128
63 40 8F 9A 0030 1129
04 A3 08 A3 DE 0034 1130
4F AA 90 0038 1131
36 A3 90 003D 1132
54 51 DO 0040 1133
00000000'EF 16 0042 1134
01 BA 0045 1135
004B 1136
004D 1137
004D 1138
004D 1139
004D 1140
004D 1141
004D 1142
004D 1143
004D 1144
004D 1145
0072 1145
0075 1146
007B 1147
007E 1148
04 A4 04 A4 10 9C 0081 1149
08 A4 08 A4 10 9C 0087 1150
53 78 AA DO 008D 1151
40 A3 08 A4 D1 0091 1152
07 14 0096 1153
3C A3 04 A4 D1 0098 1154
05 15 009D 1155
3C A3 04 A4 7D 009F 1156 30$:
54 0C C2 00A4 1157 40$:
52 FF55 CF 9A 00A7 1158 50$:
00000000'EF 16 00AC 1159
043E 8F BA 00B2 1160 60$:
05 00B6 1161
00B7 1162
00B7 1163

BRW 60$
MOVL #<ATR$C_RECATTR@16>+FHCLN,(R1) ; First longword of attrib list
MOVAB ATR_LIST_LEN(R1),4(R1) ; Second longword points to buffer.
MOVAL FHCLN+ATR_LIST_LEN(R1),R3 ; r3 = fib desc address
MOVZBL #FIB$C_LENGTH,(R3) ; fill in length field of desc
MOVAL 8(R3),4(R3) ; fill in address of fib
MOVB IFB$B_AGENT_MODE(R10),- ; move agent mode into fib
8+FIB$B_AGENT_MODE(R3)
MOVL R1,R4 ; Save address of allocated space.
JSB RM$SETEFN ; Get event flag.
POPR #^M<R0> ; Put it in R0.
$QIO_S EFN = R0,- ; Go read the header attributes
CHAN = IFB$W_CHNL(R10),- ; from disk.
FUNC = #IO$_ACCESS,- ; gio function code
IOSB = IFB$C_IOS(R9),- ; io status block
ASTADR = RM$STALLAST,- ; ast address
ASTPRM = R9,- ; ast parameter
P1 = (R3),- ; fib descriptor address
P5 = R1 ; attribute list address
BLBC R0,50$ ; Did gio succeed?
JSB RM$STALL_LOCK ; Yes, stall for io to complete.
BLBC R0,50$ ; Return if unsuccessful.
ADDL2 #ATR_LIST_LEN,R4 ; Get address of buffer.
ROTL #16,FAT$L_HIBLK(R4),FAT$L_HIBLK(R4) ; Rotate HBK.
ROTL #16,FAT$L_EFBLK(R4),FAT$L_EFBLK(R4) ; Rotate EBK.
MOVL IFB$L_SFSB_PTR(R10),R3 ; Put SFSB address in R3.
CMLL FAT$L_EFBLK(R4),SFSB$L_EBK(R3) ; Is disk EOF mark higher?
BGTR 30$ ; Yes, use disk info.
CMLL FAT$L_HIBLK(R4),SFSB$L_HBK(R3) ; Is disk HBK mark higher?
BLEQ 40$ ; No, use value block values.
MOVQ FAT$L_HIBLK(R4),SFSB$L_HBK(R3) ; Move disk ebk/hbk to sfsb.
SUBL2 #ATR_LIST_LEN,R4 ; Prepare to give back space.
MOVZBL BUF_LEN,R2 ; Length of space to deallocate
JSB RM$RETSPC1 ; Address in R4
POPR #^M<R1,R2,R3,R4,R5,R10> ; Restore registers.
RSB ; Return.

.END
```



```

$$PSECT_EP      = 00000000
$$ARGS          = 0000000B
$$RMSTEST       = 0000001A
$$RMS_PBUGCHK   = 00000010
$$RMS_TBUGCHK   = 00000008
$$RMS_UMODE     = 00000004
$$T1            = 00000000
ALTSUC          = 00000221 R      01
ATRSC_RECATTR   = 00000004
ATR_LIST_LEN    = 0000000C
BAD_EBKHBK      = 0000022D R      01
BAD_EBKHBK1     = 00000234 R      01
BUF_LEN         = 00000000 R      03
CHECK_SHARE_OPTIONS = 00000154 R      01
DO_ENQ          = 00000072 R      01
ENQ             = 000001DD R      01
ENQ$_ACMODE     = 00000028
ENQ$_ASTADR     = 0000001C
ENQ$_ASTPRM     = 00000020
ENQ$_BLKAST     = 00000024
ENQ$_EFN        = 00000004
ENQ$_FLAGS      = 00000010
ENQ$_LKMODE     = 00000008
ENQ$_LKSB       = 0000000C
ENQ$_NARGS      = 0000000E
ENQ$_PARID      = 00000018
ENQ$_PROT       = 0000002C
ENQ$_RESNAM     = 00000014
ENQERR          = 0000023B R      01
ENQRET          = 0000022B R      01
ENQSUC          = 00000225 R      01
EXESGL_SYSID_LOCK = ***** X      01
FABS$B_FAC      = 00000016
FABS$B_SHR      = 00000017
FABS$L_FOP      = 00000004
FABS$M_BIO      = 00000020
FABS$M_BRO      = 00000040
FABS$M_DEL      = 00000004
FABS$M_GET      = 00000002
FABS$M_PUT      = 00000001
FABS$M_UPD      = 00000008
FABS$V_DEL      = 00000002
FABS$V_GET      = 00000001
FABS$V_PUT      = 00000000
FABS$V_SHRDEL   = 00000002
FABS$V_SHRGET   = 00000001
FABS$V_SHRPUT   = 00000000
FABS$V_SHRUPD   = 00000003
FABS$V_UFO      = 00000011
FABS$V_UPD      = 00000003
FABS$V_UPI      = 00000006
FAT$L_EFBLK     = 00000008
FAT$L_HIBLK     = 00000004
FHCLER          = 00000016
FIB$B_AGENT_MODE = 0000002E
FIB$C_LENGTH    = 00000040
FIB$W_FID_NUM   = 00000004

```

```

FIB$W_FID_RVN   = 00000008
FIB$W_FID_SEQ   = 00000006
FTL$_BADEBKHBK = FFFFFFFD4
FTL$_NOPARENT   = FFFFFFFF0
FWASQ_SHRFIL_LCK = 00000198
FWAST_FIBBUF    = 000001F4
GBS$B_BID       = 00000008
GBS$B_BLN       = 00000009
GBS$B_CURMODE   = 0000000A
GBS$B_C_BID     = 00000009
GBS$B_C_BLN     = 00000044
GBS$B$L_ADDRESS = 00000004
GBS$B$L_LKSB    = 0000002C
GBS$B$L_LOCK_ID = 00000030
GBS$B$Q_FILENAME = 00000000
GBS$B$T_RESNAM  = 0000000C
GBS$B$W_NAME_LEN = 00000000
GBS$B$W_STATOS  = 0000002C
HBKEBK         = 0000021A R      01
IFB$B_AGENT_MODE = 0000004F
IFB$B_BID       = 00000008
IFB$B_JNLFLG2   = 000000A2
IFB$B_RFMORG    = 00000050
IFB$C_BID       = 00000008
IFB$C_FHAEND    = 00000066
IFB$L_EBK       = 00000074
IFB$L_GBH_PTR   = 00000088
IFB$L_GBSB_PTR  = 0000007C
IFB$L_HBK       = 00000070
IFB$L_IOS       = 0000000C
IFB$L_PAR_LOCK_ID = 00000080
IFB$L_SF$B_PTR  = 00000078
IFB$V_RUP       = 00000002
IFB$W_CHNL      = 00000020
INIT_SF$B       = 00000022 R      01
IOS_ACCESS      = 00000032
IRB$B_BID       = 00000008
IRB$C_BID       = 0000000A
IRB$L_IFAB_LNK  = 00000000
LCK$K_CRMODE    = 00000001
LCK$K_EXMODE    = 00000005
LCK$K_NLMODE    = 00000000
LCK$K_PWMODE    = 00000004
LCK$M_CONVERT   = 00000002
LCK$M_CVTSYS    = 00000040
LCK$M_SYNCSTS   = 00000008
LCK$M_SYSTEM    = 00000010
LCK$M_VALBLK    = 00000001
PSL$C_EXEC      = 00000001
RMS$BUG         = ***** X      01
RMS$GETBLK      = ***** X      01
RMS$GETSPC      = ***** X      01
RMS$GETSPC1     = ***** X      03
RMS$INIT_GBSB   = 00000292 RG     01
RMS$INIT_SF$B   = 00000000 RG     01
RMS$INIT_SF$B_IRB = 000000EA RG     01
RMS$LOWER_GBS_LOCK = 00000345 RG     01

```



RMOSHA  
Symbol table

SHARING ROUTINES

I 7

16-SEP-1984 00:37:46  
5-SEP-1984 16:22:33

VAX/VMS Macro V04-00  
[RMS.SRC]RMOSHA.MAR;1

Page 28  
(11)

|                   |            |    |    |
|-------------------|------------|----|----|
| RMSLOWER_LOCK     | 000001A8   | RG | 01 |
| RMSLOWER_SYSLOCK  | 00000198   | RG | 01 |
| RMSMAPERR         | *****      | X  | 01 |
| RMSRAISE_GBS_LOCK | 00000340   | RG | 01 |
| RMSRAISE_LOCK     | 0000018C   | RG | 01 |
| RMSRESTORE_LOCK   | 00000180   | RG | 01 |
| RMSRETBLK1        | *****      | X  | 01 |
| RMSRETSPC1        | *****      | X  | 03 |
| RMSRLS_GBSB       | 000003C2   | RG | 01 |
| RMSRLS_SF5B       | 0000025F   | RG | 01 |
| RMS\$SAVE_FL      | *****      | X  | 01 |
| RMS\$SETFN        | *****      | X  | 01 |
| RMS\$STALLAST     | *****      | X  | 01 |
| RMS\$STALL_LOCK   | *****      | X  | 01 |
| RMS\$DME          | = 000184D4 |    |    |
| RMS\$ENQ          | = 0001C134 |    |    |
| RMS\$INCOMP5HR    | = 0001826A |    |    |
| RMS\$SHR          | = 000186B4 |    |    |
| RMS\$UPI          | = 000187AC |    |    |
| SET LOCK          | 000001B2   | R  | 01 |
| SFSB\$B_BID       | = 00000008 |    |    |
| SFSB\$B_CURMODE   | = 0000000A |    |    |
| SFSB\$B_FAC       | = 00000034 |    |    |
| SFSB\$B_PREMODE   | = 0000000B |    |    |
| SFSB\$B_SHR       | = 00000035 |    |    |
| SFSB\$C_BID       | = 00000010 |    |    |
| SFSB\$C_BLN       | = 00000044 |    |    |
| SFSB\$C_FIX_LEN   | = 0000000A |    |    |
| SFSB\$C_ADDRESS   | = 00000004 |    |    |
| SFSB\$C_EBK       | = 00000040 |    |    |
| SFSB\$C_FAC_CODE  | = 0000000C |    |    |
| SFSB\$C_HBK       | = 0000003C |    |    |
| SFSB\$C_LK5B      | = 0000002C |    |    |
| SFSB\$C_LOCK_ID   | = 00000030 |    |    |
| SFSB\$C_LVB       | = 00000034 |    |    |
| SFSB\$Q_FILENAME  | = 00000000 |    |    |
| SFSB\$T_DEV_NAM   | = 00000016 |    |    |
| SFSB\$T_RESNAM    | = 0000000C |    |    |
| SFSB\$W_FID_NUM   | = 00000010 |    |    |
| SFSB\$W_FID_RVN   | = 00000014 |    |    |
| SFSB\$W_FID_SEQ   | = 00000012 |    |    |
| SFSB\$W_NAME_LEN  | = 00000000 |    |    |
| SFSB\$W_STATUS    | = 0000002C |    |    |
| SHRBIT5           | = 0000000F |    |    |
| SHRERR            | 0000017A   | R  | 01 |
| SHREXT            | 00000176   | R  | 01 |
| SS\$DEADLOCK      | = 00000E0A |    |    |
| SS\$SYNCH         | = 00000689 |    |    |
| SS\$VALNOTVALID   | = 000009F0 |    |    |
| SYSSDEQ           | *****      | GX | 01 |
| SYSSENQ           | *****      | GX | 01 |
| SYSSQIO           | *****      | GX | 03 |
| TAKE_GBS_LOCK     | 00000348   | R  | 01 |
| VALIDATE_EBK_HBK  | 00000001   | R  | 03 |

+-----+  
! Psect synopsis !  
+-----+

| PSECT name | Allocation        | PSECT No. | Attributes  |
|------------|-------------------|-----------|---|
| ABS        | 00000000 ( 0.)    | 00 ( 0.)  | NOPIC USR CON ABS LCL NOSHR NOEXE NORD NOWRT NOVEC BYTE |
| RMSRMSO    | 000003F4 ( 1012.) | 01 ( 1.)  | PIC USR CON REL GBL NOSHR EXE RD NOWRT NOVEC BYTE       |
| SABSS      | 00000000 ( 0.)    | 02 ( 2.)  | NOPIC USR CON ABS LCL NOSHR EXE RD WRT NOVEC BYTE       |
| RMSRMSMISC | 000000B7 ( 183.)  | 03 ( 3.)  | PIC USR CON REL GBL NOSHR EXE RD NOWRT NOVEC BYTE       |

+-----+  
! Performance indicators !  
+-----+

| Phase                  | Page faults | CPU Time    | Elapsed Time |
|------------------------|-------------|-------------|--------------|
| Initialization         | 30          | 00:00:00.09 | 00:00:00.84  |
| Command processing     | 120         | 00:00:00.63 | 00:00:03.78  |
| Pass 1                 | 557         | 00:00:24.37 | 00:01:07.76  |
| Symbol table sort      | 0           | 00:00:03.55 | 00:00:06.54  |
| Pass 2                 | 199         | 00:00:04.95 | 00:00:13.75  |
| Symbol table output    | 20          | 00:00:00.19 | 00:00:00.56  |
| Psect synopsis output  | 3           | 00:00:00.03 | 00:00:00.13  |
| Cross-reference output | 0           | 00:00:00.00 | 00:00:00.00  |
| Assembler run totals   | 931         | 00:00:33.82 | 00:01:33.36  |

The working set limit was 1950 pages.  
134597 bytes (263 pages) of virtual memory were used to buffer the intermediate code.  
There were 130 pages of symbol table space allocated to hold 2407 non-local and 45 local symbols.  
1163 source lines were read in Pass 1, producing 19 object records in Pass 2.  
40 pages of virtual memory were used to define 39 macros.

+-----+  
! Macro library statistics !  
+-----+

| Macro library name                  | Macros defined |
|-------------------------------------|----------------|
| _\$255\$DUA28:[RMS.OBJ]RMS.MLB;1    | 15             |
| _\$255\$DUA28:[SYS.OBJ]LIB.MLB;1    | 1              |
| _\$255\$DUA28:[SYSLIB]STARLET.MLB;2 | 19             |
| TOTALS (all libraries)              | 35             |

2620 GETS were required to define 35 macros.

There were no errors, warnings or information messages.

MACRO/LIS=LISS:RMOSHA/OBJ=OBJ\$:RMOSHA MSRC\$:RMOSHA/UPDATE=(ENH\$:RMOSHA)+EXECML\$/LIB+LIB\$:RMS/LIB



0320 AH-BT13A-SE  
VAX/VMS V4.0

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